

CLAIMS:

1. An implantable electrode array for insertion into at least the basal region of the cochlea, the array comprising:

5 an elongate carrier having a proximal end, a distal end, and a plurality of electrodes supported by the carrier at respective spaced locations thereon in a region between the proximal end and the distal end; and

10 a stabilising collar means extending outwardly from the elongate carrier at or adjacent a proximal end thereof, the stabilising collar means having an abutment surface adapted to abut at least a portion of the surface of the cochlea and at least substantially prevent movement of the carrier following completion of insertion of the array into the cochlea.

2. The implantable electrode array of claim 1 wherein the collar means comprises 15 a portion of the carrier having a diameter greater than that of the remainder of the carrier.

3. The implantable electrode array of claim 1 wherein a distal end of the collar means comprises the abutment surface.

20 4. The implantable electrode array of claim 3 wherein the abutment surface extends outwardly from the carrier at least substantially at a right angle to the longitudinal axis of the carrier.

25 5. The implantable electrode array of claim 1 wherein the collar means is positioned at the proximal end of the carrier.

6. The implantable electrode array of claim 1 wherein the collar means is formed integrally with the carrier member.

30 7. The implantable electrode array of claim 1 wherein the array further comprises an anchoring means extending outwardly from the collar means, the anchoring means being adapted to be anchored with body tissues and/or bone at or proximate the site of insertion of the carrier.

35 8. The implantable electrode array of claim 7 wherein the anchoring means extends outwardly at or adjacent the abutment surface of the collar means.

9. The implantable electrode array of claim 7 wherein the anchoring means is made of a mesh material through which sutures can be passed and into the tissue and/or bone to secure the mesh to the tissue and/or bone.

5 10. The implantable electrode array of claim 9 wherein the mesh material comprising the anchoring means is moulded within the collar means.

10 11. The implantable electrode array of claim 1 wherein at least a portion of the carrier extending back along the carrier from its distal end has a degree of curvature when the carrier is in its relaxed condition.

12. The implantable electrode array of claim 1 wherein an indicator means is provided on the collar of the elongate carrier to convey to the surgeon the orientation of the electrodes on the array.

15 13. The implantable electrode array of claim 1 wherein the array is insertable within a cochlea to a depth that is at or beyond the first basal turn of the cochlea.

20 14. The implantable electrode array of claim 13 wherein the array is insertable to a depth just beyond the first basal turn of the cochlea.

15. An implantable electrode array for insertion into at least the basal region of the cochlea, the array comprising:

25 an elongate carrier having a proximal end, a distal end, and a plurality of electrodes supported by the carrier at respective spaced locations thereon in a region between the proximal end and the distal end; and

30 an anchoring means extending outwardly from the elongate carrier at or adjacent a proximal end thereof and adapted to be anchored to body tissues or bone external to and surrounding the site of insertion and at least substantially prevent movement of the carrier following completion of insertion of the array into the cochlea.

35 16. The implantable electrode array of claim 15 wherein the anchoring means is made of a mesh material through which sutures can be passed and into the tissue and/or bone to secure the mesh to the tissue and/or bone.

17. The implantable electrode array of claim 16 wherein the mesh material comprising the anchoring means is moulded within the body of the carrier.

18. The implantable electrode array of claim 15 wherein at least a portion of the carrier extending back along the carrier from its distal end has a degree of curvature when the carrier is in its relaxed condition.

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19. The implantable electrode array of claim 15 wherein an indicator means is provided on the elongate carrier to convey to the surgeon the orientation of the electrodes on the array.

10 20. The implantable electrode array of claim 15 wherein the array is insertable within a cochlea to a depth that is at or beyond the first basal turn of the cochlea.

21. The implantable electrode array of claim 20 wherein the array is insertable to a depth just beyond the first basal turn of the cochlea.

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22. A method of inserting an electrode array into at least the basilar region of the scala tympani duct of a cochlea, said electrode array having a collar means attached thereto at or adjacent a proximal end thereof, the method comprising the steps of:

20 (i) forming an opening into the cochlea to allow access to the scala tympani duct;

(ii) inserting a distal end of said electrode array into the scala tympani duct and advancing the array therein; and

25 (iii) abutting at least a portion of said collar means to the tissue surrounding said opening in the cochlea, wherein said collar at least partially seals said opening into the cochlea and is arranged so that the electrode array is stabilised within the cochlea.

30 23. The method of claim 22 wherein the method further comprises an additional step prior to step (ii), in which a facia washer is fabricated and placed over said electrode array prior to its insertion into the cochlea.

24. The method of claim 23 wherein the facia washer comprises a piece of temporalis fascia that is harvested from the recipient.

35 25. The method of claim 22 wherein said array further comprises an anchoring means extending outwardly from the collar means and wherein said method comprises an additional step of attaching said anchoring means to the tissue and/or bone at or proximate the site of insertion of the carrier.

26. A method of inserting an electrode array into at least the basilar region of the scala tympani duct of a cochlea, said electrode array having an anchoring means extending outwardly therefrom at or adjacent a proximal end thereof, the method comprising the steps of:

5 (i) forming an opening into the cochlea to allow access to the scala tympani duct;

(ii) inserting a distal end of said electrode array into the scala tympani duct and advancing the array therein; and

10 (iii) attaching said anchoring means to the tissue and/or bone surrounding said opening in the cochlea so as to stabilise the array within the cochlea.

27. An implantable component of a cochlear implant system, the implantable component comprising:

15 a housing for a stimulator unit, the stimulator unit being adapted to output one or more stimulation signals;

a first elongate electrode assembly selectively activatable to apply electrical stimulation in accordance with the output of the stimulator unit; and

20 a second elongate electrode assembly selectively activatable to apply electrical stimulation in accordance with the output of the stimulator unit;

wherein only one of said first and second electrode assemblies is insertable into the cochlea at any particular time.

28. The implantable component of a cochlear implant system of claim 27 wherein the first elongate electrode assembly has less electrodes than said second electrode assembly and is adapted, when inserted in the cochlea, to apply stimulation to the basilar region of the cochlea.

29. The implantable component of a cochlear implant system of claim 27 wherein the second electrode assembly is adapted, when inserted in the cochlea, to apply stimulation to the basilar region of the cochlea and also to the region beyond the first basal turn.

30. The implantable component of a cochlear implant system of claim 27 wherein, while the first electrode assembly is inserted in the cochlea, the second electrode assembly is positioned external to the cochlea and is inoperative.

31. The implantable component of a cochlear implant system of claim 30 wherein the second electrode assembly while inoperative is stored in a biocompatible package.

32. The implantable component of a cochlear implant system of claim 27 wherein,
5 while the second electrode assembly is inserted in the cochlea, the first electrode assembly is positioned external to the cochlea and is inoperative.

33. A method of operating a cochlear implant system, said system comprising:
a housing for a stimulator unit, the stimulator unit being adapted to output one
10 or more stimulation signals; and

an elongate electrode assembly adapted to apply electrical stimulation to the cochlea of a recipient of the system in accordance with the output of the stimulator unit, the assembly having a proximal end and a distal end and comprising a plurality of electrodes disposed along its length between the proximal end and the distal end,
15 one or more of the electrodes relatively closer to the proximal end being adapted to provide stimulation to the basilar region of the cochlea and one or more of the electrodes relatively closer to the distal end being adapted to provide stimulation to a location beyond the first basal turn of the cochlea;

the method comprising the steps of:

20 while ever the recipient is only unable to hear relatively high frequency sounds, only activating those one or more electrodes adapted to provide stimulation to the basilar region of the cochlea.

34. The method of operating a cochlear implant system of claim 33 wherein the elongate electrode assembly is relatively thin so as to at least substantially maintain
25 the hydrodynamic nature of the cochlea.

35. The method of operating a cochlear implant system of claim 33 wherein those electrodes relatively closer to the distal end of the assembly are able to be selectively made activatable as the recipient's ability to perceive relatively lower frequencies deteriorates.